Present State of Coal in the Appalachian Region

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Electricity

Where Does it Come From?
**Power System**

- A giant network
- More stable if large
- Economy of scale
- 24/7 operation
- Instantaneous
- On demand - no storage
PJM Interconnection coordinates the movement of electricity in all or parts of 13 states and the District of Columbia. We work quietly behind the scenes. Our job is to ensure there is enough electricity for the 65 million people in our region.

**Key Statistics**

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millions of people served</td>
<td>65</td>
</tr>
<tr>
<td>Miles of transmission lines</td>
<td>+82,000</td>
</tr>
<tr>
<td>2016 generation capacity in MW</td>
<td>176,569</td>
</tr>
<tr>
<td>Square miles of territory</td>
<td>243,417</td>
</tr>
<tr>
<td>Area served</td>
<td>13 states + D.C.</td>
</tr>
</tbody>
</table>

Keeping the Lights On

We're sometimes called air traffic controllers of the power grid. PJM monitors and coordinates more than 1,300 electric generators and over 62,000 miles of high-voltage transmission lines. Just like air traffic controllers, we don't own the equipment we direct. Others own the power lines and power plants.

Power generators, utilities and power marketers coordinate their operations through PJM. Doing so makes major electric outages less likely to occur and reduces power costs.
Aug. 2016 - Electricity Cost (cents/kwh)

Washington 7.64
Ohio 9.89
USA 10.83
New York 15.55
California 17.15
Hawaii 24.20
Japan 22.66
UK 23.75
Germany 32.64
Energy Types

Pros

Cons
Fossil Fuels
• Protect people from the climate
• Lift people out of poverty
• Power the world

1.3 billion people (19%) have no electricity

U.S.A. - 25% of the world’s energy
  - 5% of the world’s population
US Energy – 82% Fossil Fuels

U.S. energy consumption by energy source, 2014

Total = 98.3 quadrillion Btu

- Petroleum: 35%
- Natural gas: 28%
- Coal: 18%
- Nuclear electric power: 8%
- Renewable energy: 10%

Total = 9.6 quadrillion Btu

- Solar: 4%
- Geothermal: 2%
- Wind: 18%
- Biomass waste: 5%
- Biofuels: 22%
- Wood: 23%
- Hydroelectric: 26%

Note: Sum of components may not equal 100% as a result of independent rounding.

Source: U.S. Energy Information Administration, Monthly Energy Review, Table 1.3 and 10.1 (March 2015), preliminary data

Environmentalists oppose these
1980 USA Electrical Generation

76.5% Fossil Fuels

- Oil: 10.7%
- Nat Gas: 15.1%
- Coal: 50.7%
- Nuclear: 11.0%
- Hydro: 12.2%
- Wind: 0.0%
- Solar: 0.0%
- Geothermal: 0.2%
- Biomass: 0.0%

2015 USA Electrical Generation

66.1% Fossil Fuels

- Coal: 33.3%
- Nat Gas: 32.8%
- Nuclear: 19.6%
- Hydro: 6.0%
- Wind: 4.7%
- Solar: 0.6%
- Geothermal: 0.4%
- Oil: 1.0%
- Biomass: 1.6%

12.4% - Renewables - 13.3%
Base Load vs. Cycling (Response)

- **Low cost** units dispatch first to meet demand
- 2015 – more natural gas replacing coal
If opponents had their way ....

- No Nuclear Power: 33.3%
- It's not worth the risk: 19.6%
- Stop Fracking: 32.8%
- No Dams: 6%

Total: 91.7%

We want our electricity back!

Conflict - a prosperous society relies on a robust electric systems.